Contains Confidential Business Information

CSI.1 General Information

US Manufacturer / US Importer	Harley-Davidson Motor Company
EPA Manufacturer Code	HDX
Enter the Manufacturer Code assigned by CARB, if any (Uppercase Letters Only):	HD
Parent Company Name, if applicable	
Enter the date that the EPA certification fee was paid	05/02/2016
Model Year	2017
Select the Vehicle Category for This Engine Family	Class III Highway Motorcycle With Displacement of 280cc and Over
Select the applicable application type	Correction
Enter the engine family that previously certified:	
Enter the 12-character engine family for this application	HHDXC1.75AEE
Enter the Permeation Family Name	HHDXPMETAL03
Does this Perm Family participate in Average Banking and Trading?	No
Does this EF participate in an EPA and/or CARB emission averaging program?	Yes
If yes, does EF participate in an EPA and/or CARB emission averaging program?	Both
CARB corporate averaging plan engine family?	Yes
Sales Areas of All Vehicles/Engines in This Engine Family	Some 49, Some California
Are You a Small Volume Manufacturer Designated by EPA or CARB?	Regular Volume
(EPA-Only) Are you Certifying This Vehicle/Engine By Design	
Indicate the testing procedure applied for exhaust emissions values	40CFR86, Subpart E: Chassis test
If Other, Please provide EPA/CARB approval ID for this testing procedure	
Are you the original manufacturer of the certifying vehicle/engine?	Yes
Original Equipment Manufacturer #1	
Enter the full legal name of the vehicle original equipment manufacturer	
Enter the country where the vehicles were assembled	
Enter the full legal name of the engine original equipment manufacturer	
Enter the country where the engines were assembled	
Enter any comments that you want EPA/CARB to know regarding the above information	[redacted]

CSI.2A EPA Exhaust Emission Standards and Certification Levels

Exhaust Emissions Unit	g/km
HC	
Certification Level	
Emission Standard	
NO_x	
Certification Level	
$HC+NO_x$	
Certification Level	0.4
Emission Standard	
Family Emission Limit	0.7
CO	
Certification Level	2.4
Emission Standard	12.0
Family Emission Limit	
Applicant Notes	HC + NOX = 0.38

CSI.2B CARB Emission Standards and Certification Levels

CARB HMC Early Compliance Multiplier	1
CARB Exhaust Emissions	
Exhaust Emissions Unit	G/KM
HC	
Certification Level	0.3
Emission Standard	
Family Emission Limit	
NO_x	
Certification Level	0.1
$HC+NO_x$	
Certification Level	0.4
Emission Standard	0.8
Family Emission Limit	0.7
CO	
Certification Level	2.4
Emission Standard	12
Emission Useful Life (years)	5
Emission Useful Life (km)	30000
Vehicle Evaporative Emissions (HMC Only)	
Diurnal + Hot Soak (Unit: g/test)	
Evaporative Family 1	
Evaporative Family Name	HHDXU0025ACA
Certification Level	0.5
Emission Standard	2.0
Emission Useful Life (years)	5
Emission Useful Life (km)	30000
Applicant Notes	HC + NOX = 0.38

CSI.3 Engine Family Description

Engine Family Useful Life	EPA Required Useful Life
Years	
Hours	
Kilometers	
Does this engine family have multiple operating fuels?	Single Fuel System
Fuel Type 1	
Primary Operating Fuel Type	Gasoline
Fuel Type, If Other	
Combustion Cycle	4-Stroke
Other	
Cylinder Arrangement	Vee
Other	
Number of Cylinders	2
Valves per Cylinder	4
Engine Type	Reciprocating (Otto Cycle)
Other	
Engine Cooling Media	Air Cooled
Other	
Does this engine family contain multiple displacements?	Yes
Displacement Values	1746.0
New Technology	Yes
If yes, explain	4 Valves per cylinder. 2016 & prior was 2.
Applicant Notes	

CSI.4 Exhaust Emission Control Information

Exhaust ECS 1	
Is this engine family equipped with a catalytic converter?	Yes
Enter the total number of catalytic converters (1 - 9)	1
Select the applicable catalytic converter configuration	Single
Select the catalytic converter type used	Three Way Catalyst (TWC), single-bed, closed-loop warm up
Does the engine family use an Exhaust Gas Recirculation (EGR) technology as part of the Emission Control System?	No
Enter a description of the EGR technology used	
Select the applicable engine fuel system type	Sequential Multiport FI
If Other, Enter a description of the fuel system	
Enter the number of carburetors	
Enter the number of barrels per carburetor	

Contains Confidential Business Information

Select the method of air aspiration for the engine	Naturally Aspirated
If Other, Enter a description of the method of engine aspiration	
Select the Charge Air Cooler Type	No Air Cooler
Select the type of electronic engine control module	Engine Control Module
Select the applicable method of air injection methodology	Not Applicable
If Other, enter the applicable method of air injection methodology	
Are there any air/fuel feedback sensor used on this engine family?	Yes
Sensor Type	Heated Oxygen Sensor
Sensor Type, if Other	
Specify the number of feedback sensor(s) used	2
Select the configuration of the feedback sensors arrangement	Series
Applicant Notes	

CSI.5 Exhaust Emission Data Vehicle/Engine (EDV/E) and Emissions Test Data

Test Vehicle #1	
EDV ID	[redacted]
EDV Type	
Original EF Name That Contains EDV Data	
DDV Engine Family if Different from EDV Engine Family	
Configuration ID	[redacted]
Model Name	
Tire Pressure (in PSI)	26
Road Load Force (N)	186
Rated Power	[redacted]
Rated Power Unit	kW
RPM at Rated Power	5020
Cylinder (Block) Arrangement	Vee
Number of Cylinders	2
ECS Number (From Tab 4)	ECS 1
Displacement (cc)	1746
Transmission	Manual
Number of Gears	6
N/V Ratio	24
Curb Mass (in kg)	558
Equivalent Inertia Mass (in kg)	640
Exhaust Test #1	
Date	[redacted]
Test Identification Number	
Test By	Manufacturer Conducted Test
Test For	Certification Emission Test

Contains Confidential Business Information

Test Fuel	Indolene
Test Measurement Unit	Kilometers
Tested at Cumulative Km or Hr	3535
Raw Exhaust Emission Test Results	
Test Unit	g/km
HC	.13
NO_x	.06
HC + NO_x	.19
CO	1.34
CO_2	149
Exhaust Test #2	
Date	[redacted]
Test Identification Number	[redacted]
Test By	Manufacturer Conducted Test
Test For	Certification Emission Test
Test Fuel	Indolene
Test Measurement Unit	Kilometers
Tested at Cumulative Km or Hr	8081
Raw Exhaust Emission Test Results	
Test Unit	g/km
HC	.14
NO_x	.07
HC + NO_x	.21
CO	1.28
CO_2	150
Exhaust Test #3	
Date	[redacted]
Test Identification Number	[redacted]
Test By	Manufacturer Conducted Test
Test For	Certification Emission Test
Test Fuel	Indolene
Test Measurement Unit	Kilometers
Tested at Cumulative Km or Hr	8112
Raw Exhaust Emission Test Results	
Test Unit	g/km
HC	.16
NO_x	.07
HC + NO_x	.23
CO	1.38
CO_2	150
Exhaust Test #4	
Date	[redacted]
Test Identification Number	[redacted]
Test By	Manufacturer Conducted Test
Test For	Other
Test Fuel	Indolene
Test Measurement Unit	Kilometers
Tested at Cumulative Km or Hr	15053
Raw Exhaust Emission Test Results	

Test Unit	g/km
HC	.19
NO_x	.10
HC + NO_x	.29
CO	1.75
CO_2	148

For EPA Certification (50 States and 49 State)

Certification Level Unit (Specified on CSI.2a)	G/KM
HC	
NO_x	
HC + NO_x	0.4
CO	2.4
End of Useful Life Emissions Value	Calculated by applying DF
HC	.27
NO_x	.10
HC + NO_x	.38
CO	2.35
EPA Deterioration Factor	
DF Type	Multiplicative
HC	1.437
NO_x	1.020
HC + NO_x	1.292
CO	1.344

For CARB Certification (50 State or CA only)

Certification Level Unit (Specified on CSI.2b)	G/KM
HC	0.3
NO_x	0.1
HC + NO_x	0.4
CO	2.4
Enter the Test Number Associated to the Official Certification Level	Test #4
HC	.19
NO_x	.10
HC + NO_x	.29
CO	1.75
CO_2	148
Extrapolated or End of Useful-Life Data (Hr or Km) Interval	30000
HC	.27
NO_x	.10
HC + NO_x	.38
CO	2.26
Interpolated Total Test Interval (Hr or Km)	15000
HC	.19
NO_x	.10

Contains Confidential Business Information

$HC + NO_x$	.29
CO	1.68
Modified DF: Interpolated Minimum Test Distance (Hr or Km)	
HC	
NO_x	
$HC + NO_x$	
CO	
CARB Deterioration Factor (Additive)	
HC	
NO_x	
$HC + NO_x$	
CO	
CARB Deterioration Factor (Multiplicative)	
HC	1.437
NO_x	1.020
$HC + NO_x$	
CO	1.344
End of Useful Life Emissions Value	**Calculated by applying DF**
HC	.27
NO_x	.10
$HC + NO_x$	.38
CO	2.35
Manufacturer Comments	[redacted]

CSI.5A Federal Mandatory Greenhouse Gas (GHG) Reporting

Greenhouse Gas 1	
GHG Name	CO2 (Carbon Dioxide)
GHG Value	149
Unit of GHG Value	grams/kilometer
Measured/Estimated at Distance (km)	3635
By Method	Tested result from the EDV(s) of the Engine Family
Test Vehicle ID	40852X
Reference/Citations	APG506018
Test/Estimation Date	01/20/2016
Greenhouse Gas 2	
GHG Name	CH4 (Methane)
GHG Value	.013
Unit of GHG Value	grams/kilometer
Measured/Estimated at Distance (km)	3635
By Method	[redacted]
Test Vehicle ID	
Reference/Citations	
Test/Estimation Date	01/20/2016
Greenhouse Gas 3	
GHG Name	N2O (Nitrous Oxide)
GHG Value	.004
Unit of GHG Value	grams/kilometer
Measured/Estimated at Distance (km)	3635

Contains Confidential Business Information

By Method	[redacted]
Test Vehicle ID	
Reference/Citations	
Test/Estimation Date	01/20/2016
Applicant notes for GHG data:	

CSI.6A Permeation Emissions Control / Test Data

(Optional Until Model Year 2008)

Fuel Tank 1	
Permeation Family Name	HHDXPMETAL03
Certification Level (g/m²/day)	.30
Emission Standard (g/m²/day)	1.5
Family Emission Limit (g/m²/day)	
Permeation Emissions Certification Method	E = Emission tests
Fuel Tank Manufacturer	Harley-Davidson
Certify by Design	
Select the applicable permeation emission certify-by-design technology category.	
Other	
Certify by Emission Testing	
Use Carry-over Test Data?	Yes
If carryover, from permeation family	GHDXPMETAL03
Carryover DF	Yes
If carryover, from permeation family	GHDXPMETAL03
Tank Material	Metal
Tank Material if Other	
Control Strategy	[redacted]
Least Thickness (mm)	
Least Barrier Weight (%) Note: If Tank Material is not "Metal", one of the three "Least Barrier" fields is required.	
Least Barrier Mol (%)	
Least Barrier Thickness (mm)	
Production Method	Other Production Method
Production Method if Other	Metal
Test Data (g/m²/day)	.30
DF (g/m²/day)	.04
Certify by Certified Tank	
EPA Certificate Number	

Fuel Line 1	
Certification Level (g/m²/day)	2.9
Emission Standard (g/m²/day)	15
Permeation Emissions Certification Method	E = Emission tests
Fuel Line Manufacturer	Nobel Automotive
Certify by Design	

Select the applicable permeation emission certify-by-design technology category.	
Other	
Certify by Emission Testing	
Use Carry-over Test Data?	Yes
If carryover, from permeation family	GHDXPMETAL03
Carryover DF	Yes
If carryover, from permeation family	GHDXPMETAL03
Fuel Line Material	Plastic
Fuel Line Material if Other	
Least Thickness (mm)	1
Test Results (g/m^2/day)	2.9
DF (g/m^2/day)	
Certify by Certified Fuel Line	
EPA Certificate Number	
Fuel Line 2	
Certification Level (g/m^2/day)	.3
Emission Standard (g/m^2/day)	15
Permeation Emissions Certification Method	E = Emission tests
Fuel Line Manufacturer	MPC
Certify by Design	
Select the applicable permeation emission certify-by-design technology category.	
Other	
Certify by Emission Testing	
Use Carry-over Test Data?	Yes
If carryover, from permeation family	GHDXPMETAL03
Carryover DF	Yes
If carryover, from permeation family	GHDXPMETAL03
Fuel Line Material	Plastic
Fuel Line Material if Other	
Least Thickness (mm)	1
Test Results (g/m^2/day)	.31
DF (g/m^2/day)	
Certify by Certified Fuel Line	
EPA Certificate Number	
Comments	

CSI.6B Evaporative Family Description

Evaporative Family#1	
Evaporative Family	HHDXU0025ACA
Evaporative Family Group	
Vapor Storage Device (canister)	Yes
Number of Canisters	1
Canister Configuration	Single
Canister(s) Total Working Capacity (g)	25

Contains Confidential Business Information

Canister(s) Total Medium Volume (cc)	380
Canister Storage Medium	Carbon
Canister Housing Material	Plastic
Canister Vent System Configuration	Closed Bottom
Vapor Storage Device (crankcase)	No
Vapor Storage Device (intake manifold element)	Yes
Vapor Storage Device (charcoal air cleaner)	No
Purge System Configuration	Purged Control
Individual Fuel Tanks in this Evaporative Family	
Tank Material / Volume Fuel Tank #1	
Steel or Plastic	Steel
50% Fill Volume (liters)	11.4
Tank Material / Volume Fuel Tank #2	
Steel or Plastic	Steel
50% Fill Volume (liters)	6.6
Tank Material / Volume Fuel Tank #3	
Steel or Plastic	Steel
50% Fill Volume (liters)	8.9
Tank Material / Volume Fuel Tank #4	
Steel or Plastic	Steel
50% Fill Volume (liters)	9.5
Fuel Tank Material(s) Description	steel
Fuel Hose Material(s) Description	Teflon
Comments	[redacted]

CSI.6C Evaporative Emission Data Vehicle (EDV) and Emission Test Data

Evaporative EDV Set #1	
Evaporative Family	HHDXU0025ACA
EDV Evaporative Type	New
EDV Carryover or Carry Across Evaporative Family	
Evaporative Family Group	
Evaporative Test Vehicle ID	40890X
Evaporative Test Vehicle Model	FLHTKSE
Engine Displacement (cc)	1868
50%-Fill Fuel Tank(s) Capacity (liters)	11.4
100%-Fill Fuel Tank(s) Capacity (liters)	22.7
Evaporative Emission Test #1	
General Evaporative Emission Test Information	

Contains Confidential Business Information

Test Date	[redacted]
Test ID Number	
Test By	Manufacturer
Test Fuel	Indolene
Test For	Certification Emission Test
Test Cycle	SHED
Raw Evaporative Testing Result (g/test)	
Diurnal	.07
Hot Soak	.05
Diurnal + Hot Soak	.12

Evaporative Emission Test #2

General Evaporative Emission Test Information	
Test Date	[redacted]
Test ID Number	
Test By	Manufacturer
Test Fuel	Indolene
Test For	Certification Emission Test
Test Cycle	SHED
Raw Evaporative Testing Result (g/test)	
Diurnal	.11
Hot Soak	.03
Diurnal + Hot Soak	.14

Evaporative Emission Test #3

General Evaporative Emission Test Information	
Test Date	[redacted]
Test ID Number	
Test By	Manufacturer
Test Fuel	Indolene
Test For	Certification Emission Test
Test Cycle	SHED
Raw Evaporative Testing Result (g/test)	
Diurnal	.10
Hot Soak	.06
Diurnal + Hot Soak	.16

Evaporative Emission Test #4

General Evaporative Emission Test Information	
Test Date	[redacted]
Test ID Number	
Test By	Manufacturer
Test Fuel	Indolene
Test For	Certification Emission Test
Test Cycle	SHED
Raw Evaporative Testing Result (g/test)	
Diurnal	.12
Hot Soak	.08

Diurnal + Hot Soak	.20
Enter the Evaporative Test Number as the Official Raw Evaporative Emission Certification Level (without DF)	Test #4
Diurnal	.12
Hot Soak	.08
Diurnal + Hot Soak	.20
Overall Evaporative Emission Deterioration Factor	.30
Overall Evaporative Emission Certification Level (with DF)	.50
Manufacturer Comments	

CSI.6D Evaporative Durability Data Vehicle (DDV) and Durability Test Data

Evaporative DDV Set #1	
Evaporative Family	HHDXU0025ACA
DDV Evaporative Type	New
DDV Carryover or Carry Across Evaporative Family	
Evaporative Family Group	
DF Test Vehicle ID	40890X
Evaporative Test Vehicle Model	FLHTKSE
Engine Displacement (cc)	1868
50%-Fill Fuel Tank(s) Capacity (liters)	11.4
100%-Fill Fuel Tank(s) Capacity (liters)	22.7
Evaporative DDV Comments	same as EDV
Using assigned CARB Bench DF	Yes
DF Test Vehicle ID	
Evaporative Bench DF Test #	
Test Date	
Test ID Number	
Test Fuel	
Test Point	
THC Raw Evaporative Emission Value (g/test)	
Bench Interpolated Value (typically at $^1/_2$ useful-life mileage test point)	
Bench Interpolated Value for Total Hydrocarbons (typically at $^1/_2$ useful-life mileage test point)	
Bench Extrapolated Value (typically at useful-life mileage test point)	
Bench Extrapolated Value for Total Hydrocarbons (typically at useful-life mileage test point)	
Bench Evaporative Deterioration Factor for Total Hydrocarbons	.5
DF Test Vehicle ID	assigned
Evaporative Vehicle DF Test #1	

Contains Confidential Business Information

Test Date	[redacted]
Test ID Number	
Test Fuel	Indolene
Test Point	3536
THC Raw Evaporative Emission Value (g/test)	.12
Evaporative Vehicle DF Test #2	
Test Date	[redacted]
Test ID Number	
Test Fuel	Indolene
Test Point	8092
THC Raw Evaporative Emission Value (g/test)	.15
Evaporative Vehicle DF Test #3	
Test Date	[redacted]
Test ID Number	
Test Fuel	Indolene
Test Point	8121
THC Raw Evaporative Emission Value (g/test)	.16
Evaporative Vehicle DF Test #4	
Test Date	[redacted]
Test ID Number	
Test Fuel	Indolene
Test Point	15033
THC Raw Evaporative Emission Value (g/test)	.20
Vehicle Interpolated Value (typically at $^1/_2$ useful-life mileage test point)	15000
Vehicle Interpolated Value for Total Hydrocarbons (typically at $^1/_2$ useful-life mileage test point)	.20
Vehicle Extrapolated Value (typically at useful-life mileage test point)	30000
Vehicle Extrapolated Value for Total Hydrocarbons (typically at useful-life mileage test point)	.30
Vehicle Evaporative Deterioration Factor for Total Hydrocarbons	.10
Overall Evaporative Vehicle DF [(bench + vehicle)/2]	.30
Outlier Information	
Manufacturer Comments - Bench	[redacted]
Manufacturer Comments - Vehicle	

CSI.7 Models Covered

Vehicle/Engine Models Covered	
Model #1	
Final Assembly Manufacturer Name	Harley-Davidson
Manufacturer Model Name	FLHTCUTG
Commercial / Advertised Model Name	TRI GLIDE ULTRA
Engine Code	[redacted]

Contains Confidential Business Information

Vehicle Category	Class III Highway Motorcycle With Displacement of 280cc and Over
Evaporative Family (CARB)	HHDXU0025ACA
Number of Evaporative Canisters (CARB)	1
Bore (mm)	100.0
Displacement (cc)	1746
Stroke (mm)	111.1
Basic Ignition Timing (degrees, BTDC)	15
Rated Power (kW)	[redacted]
RPM @ Rated Power	5020
Rated Torque (nt-m)	154
RPM @ Rated Torque	3500
N/V Ratio	27
Curb Mass (kg)	558
Equivalent Inertial Mass (kg)	640
Transmission (e.g. M5, A3, etc.)	M6
Vehicle Emission Compliance Information (VECI) Label Type	California and 49-state labels
Fuel System	Single Fuel System
Operating Fuel	Gasoline
Emission Control System (model / rating specific)	ECS 1
Projected Sales (CBI) - CA Only	[redacted]
Projected Sales (CBI) - US Total (includes CA Sales)	
Projected Sales (CBI) - US (49-States)	
Permeation Family Name	HHDXPMETAL03
CARB-Only ATV Specification (Category ATV.A)	
50" or Less in Width?	
4 or More Low Pressure Tires?	
Seat Straddled by Operator?	
Without Passenger Seating?	
Handlebar?	
Manufacturer Previously Exempted?	
Internal Combustion Engine?	
4 or more wheels?	
Bench or bucket seating for 2 or more persons?	
Steering Wheel?	
Rear Payload Capacity >= 350lbs., or seating for 6 or more passengers?	
Designed for operation over rough terrain?	
Internal combustion engine <= 1.0L?	
Max power <= 30 kW?	
Can Travel >= 25 mph?	
4 wheels?	

Bench or bucket seating for 1 or more persons?	
Rear Payload Capacity <= 600 lbs., or N/A to SCAR-like vehicle?	
Designed for operation over rough terrain or sand?	
Can travel >=25 mph, or N/A to SCAR-like vehicle?	
Designed primarily for operation over sand dunes?	
Internal combustion engine > 1.0L?	
Applicant Notes	